



A Framework for Secure Password Authentication Based on Encrypted Negative Passwords

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Abstract_ It is all about securing passwords and making the system more secure against intruders. Secure password storage is critical in systems based on password authentication, which, despite some security flaws, remains the most widely used authentication technique. Consumers are responsible for creating their own passwords on most e-commerce sites, and they frequently do so without assistance from the web site or system administrator. Consumers do not create long or complicated passwords because they cannot remember them, according to common knowledge. Most e-commerce sites employ a method in which passwords are only encrypted and not properly secured. In our project, we propose a password authentication framework designed for secure password authentication.. In our framework, first the received plain password from a client is hashed through a cryptographic hash function (Script and PBKDF2.)Then, the hashed password is converted into a negative password. Finally, the negative password is encrypted into an Encrypted Negative Password(ENP)(The cryptographic hash function and symmetric encryption make it difficult to crack passwords from ENPs. Moreover, there are lots of corresponding ENPs for a given plain password, which makes pre computation attacks (e.g., Brute Force Attack , Rainbow table attack and Dictionary attack)..

Key Words: Encrypted Negative Password, Symmetric key algorithm, Hashed password

1.INTRODUCTION

The development of the Internet, a vast number of online services have emerged, in which password authentication is the most widely used authentication technique, for it is available at a low cost and easy to deploy Hence password security always attracts great interest from academia and industry. Despite great research achievements on password security, passwords are still cracked since users' careless behaviours. The instance, many

users often select weak passwords they tend to reuse same passwords in different systems they usually set their passwords using familiar vocabulary for its convenience to remember. In addition, system problems may cause password compromises. It is very difficult to obtain passwords from high security systems. In this case stealing authentication data tables (containing usernames and passwords) in high security systems is difficult. On the other hand, when carrying out an online guessing attack,



there is usually a limit to the number of login attempts. However, passwords may be leaked from weak systems. Vulnerabilities are constantly being discovered, and not all systems could be timely patched to resist attacks, which gives adversaries an opportunity to illegally access weak systems. In fact, some old systems are more vulnerable due to their lack of maintenance. Finally, since passwords are often reused, adversaries may log into high security systems through cracked passwords from systems of low security. After obtaining authentication data tables from weak systems, adversaries can carry out offline attacks. Passwords in the authentication data table are usually in the form of hashed passwords. However, because processor resources and storage resources are becoming more and more abundant, hashed passwords cannot resist pre computation attacks, such as rainbow table attack and lookup table attack. Systems could be timely patched to resist attacks, which gives adversaries an opportunity to illegally access weak systems. In fact, some old systems are more vulnerable due to their lack of maintenance. Finally, since passwords are often reused, adversaries may log into high security systems through cracked passwords from systems of low security. After obtaining authentication data tables from weak systems, adversaries can carry out offline attacks. Passwords in the authentication data table are

usually in the form of hashed passwords.

2.LITERATURE SURVEY

Joseph Bonneau, Cormac Herley, said that the theory on passwords has lagged behind practice, where large providers use back-end smarts to survive with imperfect technology. Simplistic models of user and attacker behaviors have led the research community to emphasize the wrong threats. Authentication is a classification problem amenable to machine learning, with many signals in addition to the password available to large Web services. Passwords will continue as a useful signal for the foreseeable future, where the goal is not impregnable security but reducing harm at acceptable cost

Ch Gopal Krishna and R Bala Dinakar, This development brings great convenience but also increases the probability of exposing passwords to shoulder surfing attacks. Attackers can observe directly or use external recording devices to collect users' credentials. To overcome this tricky, we proposed a novel authentication system Pass Matrix, based on graphical passwords to resist shoulder surfing attacks. With a one-time valid login pointer and circulative horizontal and vertical bars covering the entire scope of pass-images, Pass Matrix offers no hint for attackers to figure out or narrow down the password even they conduct multiple camera-based attacks.

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Dabhade, To increase password security, online authentication systems have started to enforce stricter password policies. We introduce a new metric called Coverage to quantify the correlation between passwords and personal information. Personal-PCFG cracks passwords much faster than PCFG and makes online attacks much more likely to succeed. We examine the use of simple distortion functions that are chosen by users to mitigate unwanted correlation between personal information and passwords. To increase password security, online authentication systems have started to enforce stricter password policies. Password re-

generation method is available in this system..

3.PROPOSED WORK

In our project, we propose a password authentication framework designed for secure password authentication.. In our framework, first the received plain password from a client is hashed through a cryptographic hash function (Script and PBKDF2.)Then, the hashed password is converted into a negative password. Finally, the negative password is encrypted into an Encrypted Negative Password(ENP) using a symmetric-key algorithm (e.g., AES), and multi-iteration encryption could be employed to further improve security

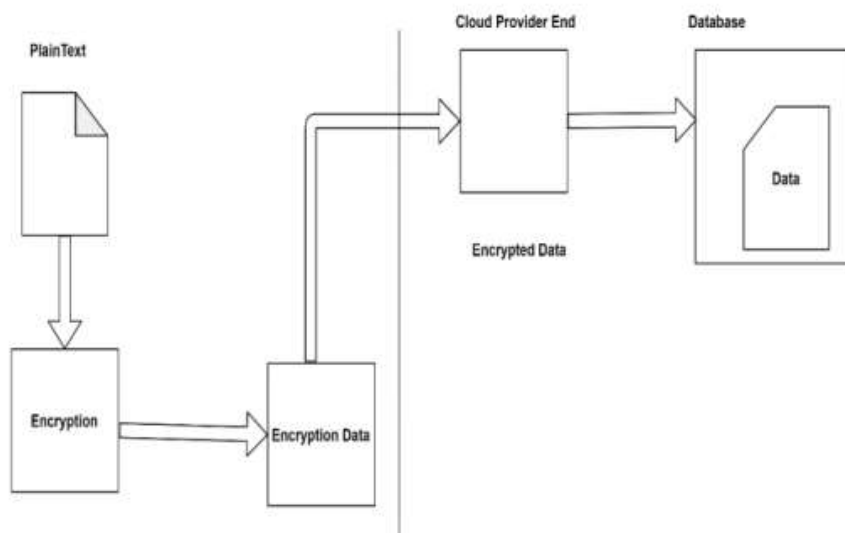


Fig 1:Working Flow

3.1 IMPLEMENTATION

- **Data Owner**

- In this module, the data owner uploads their data in the Web server. For the security purpose the data owner encrypts the data file and then store in the Web. The Data owner can



have capable of manipulating the encrypted data file. The data owner will send Meta data to Audit Web. In audit Web raw or metadata information is available for auditing and data integrity checking purpose. Data owner will create an end user and the data owner can set the access permission (read or write) to user and also Verifies Password.

- **Web Server**

- The Web server is responsible for data storage and file authorization for an end user. The data file will be stored with their tags such as file name, secret key, digital sign, and owner name. The data file will be sending based on the privileges. If the privilege is correct then the data will be sent to the corresponding user and also will check the file name, end user name and secret key. If all are true then it will send to the corresponding user or he will be captured as attacker. The Web server can also act as attacker to modify the data which will be auditing by the audit Web and also View All Encrypted Negative Password, View All Attacker, View All Password Attackers.

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4.RESULTS AND DISCUSSIONS

- **Data Consumer(End User)**

- The data consumer is nothing but the end user who will request and gets file contents response from the corresponding Web servers. If the file name and secret key, access permission is correct then the end is getting the file response from the Web or else he will be considered as an attacker and also he will be blocked in corresponding Web. If he wants to access the file after blocking he wants to UN block from the Web and also verifies password.

- **Attacker**

- Attacker is one who is integrating the Web file by adding malicious data to the corresponding Web. They may be within a Web or from outside the Web. If attacker is from inside the Web then those attackers are called as internal attackers. If the attacker is from outside the Web then those attackers are called as external attackers.

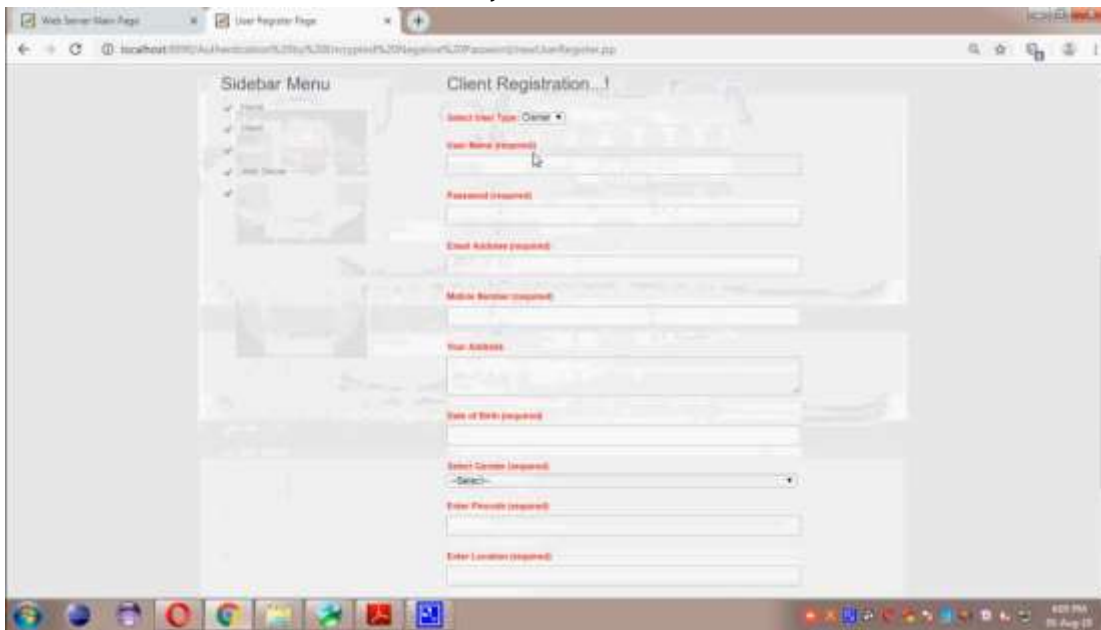


Fig 2:Registration

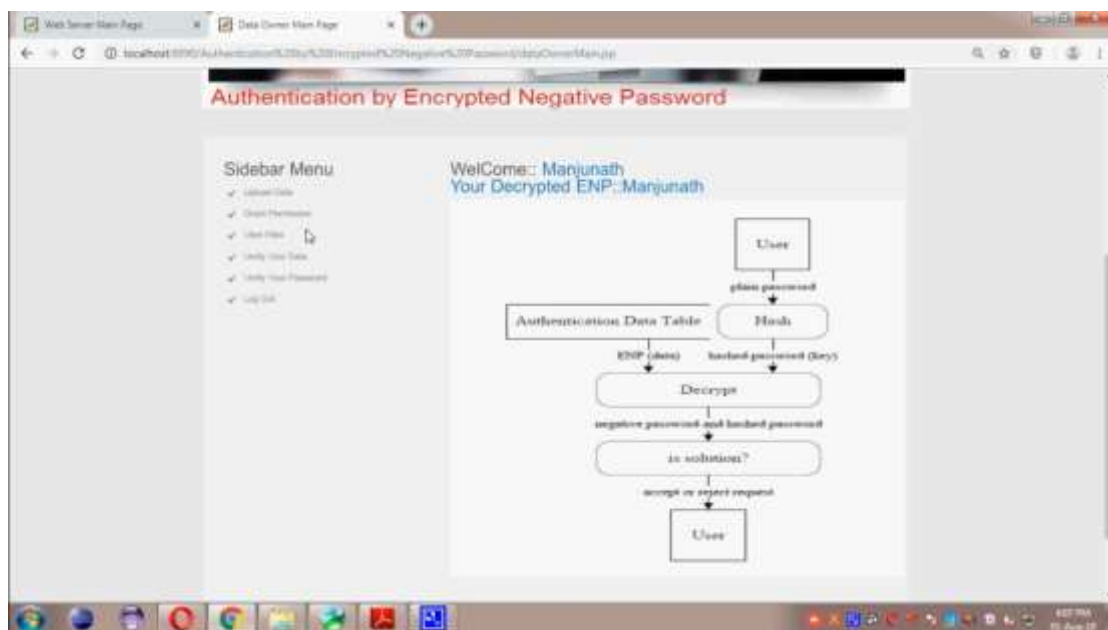


Fig 3:Home Page



Fig 4:Data Upload Page

5.CONCLUSION

In this paper, we proposed a password protection scheme called ENP, and presented a password authentication framework based on the ENP. In our framework, the entries in the authentication data table are ENPs. In the end, we analyze and compared the attack complexity of salt, iteration count, hash function. The results show that the ENP could resist lookup table attack and provide stronger password protection under dictionary attack. It is worth mentioning that the ENP does not need extra elements (e.g., salt) while resisting lookup table attack. In the future, other NDB generation algorithms will be studied and introduced to the ENP to further improve password security..

FUTURE WORK

In the future, other NDB generation algorithms

will be studied and introduced to the ENP to further improve password security. Furthermore, other techniques, such as multi-factor authentication and challenge-response authentication.

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Industrial Engineering Journal

ISSN: 0970-2555

Volume : 52, Issue 6, June : 2023

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